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AUDUBON

Water



On a clear morning in early spring I motored out from Big Pine Key across Hawk Channel to a string of boats dangling from buoys at the edge of blue water. This was Looe Key, the most mature reef in the lower Florida Keys, famous for its classical spur-and-groove formation, clear waters, abundant fish, and nearby wrecks. A half-dozen dive boats, like giant sea creatures, were disgorging snorkelers. And a sleek powerboat owned by the National Oceanic and Atmospheric

well known and too well developed. And therein lies the problem.

When a wild place moves from being protected by no one to being protected by the federal government, when it changes from untrammelled usage to controlled usage, the process can be painful. The change is a rebirth, and the labor is often anguishing.

Not even NOAA's most vocal opponents deny that the sanctuary's 2,800 square nautical miles of living coral reefs, mangrove islands, and seagrass beds are in environmental trouble. Almost every

old-timer talks of the days when underwater visibility was about 100 feet on the Keys and there were very few algae blooms and the reef was healthy and every local species of fish was abundant.

Now visibility rarely exceeds 50 feet, algae blooms are frequent, and parts of the coral reef—the longest in the continental United States and the third-largest barrier reef in the world—are bleached and diseased.

Similar troubles have plagued other parts of the sanctuary system. Along the California coast, planned offshore oil rigs once threatened to decimate delicate ecosystems, home to creatures such as seals and sea lions, as well as to the nation's largest kelp beds. In Hawaii, unregulated parasailing and waterskiing were disturbing humpback whale mothers and calves. In New England, sand and gravel dredging sullied the waters off Cape Cod.

But some people just don't like what NOAA has tried to do about all this. The agency's

plans govern everything in the marine environment: boating, diving, waterskiing, treasure hunting, sewage disposal, whale watching, commercial and recreational fishing, and on and on. And in some places resistance to the sanctuary idea has been spirited. Here in Florida, some old-timers are so cantankerous that they once declared the Keys a republic, separate from the rest of the United States. They take great pride in a freebooting 19th-century independence, and they don't want anyone telling them anything—especially the "government."

The outcome of the controversy has yet to be decided. But chances are that in Florida the agency will be allowed to exercise its mandate—as it has elsewhere—to identify, protect, and conserve another maritime treasure.

Gray's Reef is 17.5 nautical miles off the Georgia coast in water 50 to 70 feet deep, a magnet for black sea bass and loggerhead turtles. This is believed to be one of the

Worlds

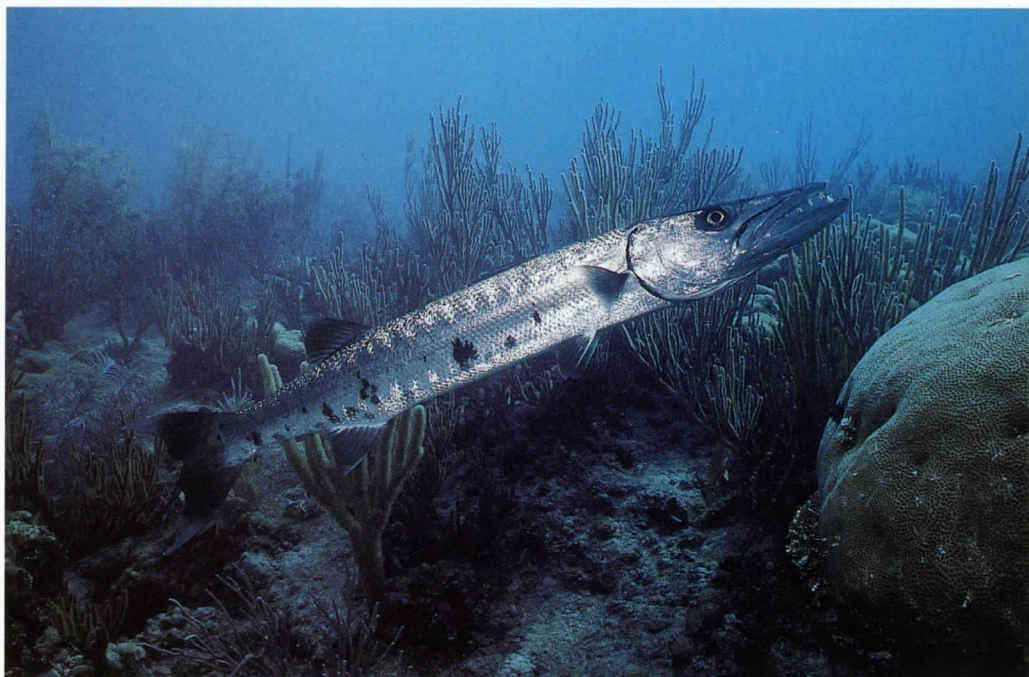
Off America's shores, 12 national marine sanctuaries preserve and protect the nation's undersea treasures.

BY ROBERT CORAM

Association (NOAA) lazily circled the reef, the lawmen aboard making sure that no one was spearfishing or taking tropical fish, coral, or invertebrates from the protected waters.

The Florida Keys National Marine Sanctuary is one of 12 sanctuaries run by NOAA scattered along the shores of the United States. Underwater preserves, they contain resources significant for historical, cultural, ecological, recreational, or aesthetic reasons. Many of them are unknown to much of the general public, remaining relatively undeveloped.

But some, such as the Keys sanctuary, are perhaps too



A giant sea star (left) at the Monterey Bay sanctuary; at the Florida Keys sanctuary, a great barracuda (above).



largest near-shore live-bottom reefs off the southeastern coast. Since it was designated a sanctuary in 1981, an extensive monitoring program for both vertebrates and invertebrates has been under way. Within the sanctuary, commercial fishing with trawls is forbidden. However, it is not uncommon to see 50 or 60 recreational fishing boats over the reef during a fishing tournament. Gray's Reef also has historical significance: During World War II's Battle of the Atlantic, German U-boats sank Allied merchant ships near the reef, which was then called Sapelo Ground (though no wrecks remain today).

The oldest of the national marine sanctuaries is located 16 nautical miles southeast of Cape Hatteras. The USS *Monitor*, an ironclad, turreted Civil War vessel that sank in a ferocious gale during the winter of 1862, was a prototypical vessel that had a major impact on marine architecture and technology. Twenty years ago this site was designated solely for its historical significance. Since then, NOAA scientists and private researchers have also conducted 24 scientific expeditions on the *Monitor*.

Stellwagen Bank is three miles north of Cape Cod at the entrance of Massachusetts



Bay, in the Gulf of Maine. Its 638 square nautical miles include a sandbank covered by waters where humpback, fin, and northern right whales—all endangered—feed and nurse their young. In this pristine piece of ocean, whale-watching ticket sales amount to about \$20 million annually, proving again the truth of the adage "A sound economy depends on a sound environment."

Flower Garden Banks is the only marine sanctuary located entirely in the Gulf of Mexico. Its two postage-stamp-size bits of isolated coral reef lie about 100 miles southeast of Galveston, Texas. The 41.7 square nautical miles of the

sanctuary contain the northernmost living coral reef on the U.S. continental shelf. Here, hammerhead sharks and sea turtles have found a refuge. Fishermen have sought grouper and snapper since the 1800s. And because the East Flower Garden Bank is the location of the only known oceanic brine seep—a thick layer of salt underwater—in continental shelf waters, the sanctuary is prized as a research site.

There are other national marine sanctuaries running up the west coast—from central California's Channel Islands (off Santa Barbara), through Monterey Bay (opposite San Francisco), the Gulf of the Farallones, and Cordell Bank, and ending with Washington State's dramatic Olympic Coast. Across the Pacific are two other sanctuaries, in Hawaii and American Samoa. Most of them have engendered little or no controversy. But proposed new sanctuaries in Hawaii, the Pacific Northwest, and the Great Lakes are causing the same sort of ferment as found in Florida.

It is natural that as the world becomes more crowded and civilization more jangled, people want to go to places where they can relax with few restraints. It is understandable that they want places where they can think only of today. But as a fisherman in the Keys remarked, "If we don't plan for tomorrow, there won't be a tomorrow."

Areas under the protection of the federal government usually thrive and prosper. Protected ecosystems replenish themselves and become closer to what they were in our great-grandparents' day. Despite a serious lack of funding—the entire sanctuary

program runs on only about \$12 million a year—NOAA has been able to do something that many considered impossible: It has begun to unring the bell. The agency has, to some degree, ameliorated the effect of man's heavy hand on the environment.

Anyone who has been through the laborious movement of a wild area into federal protection knows that pain and controversy are temporary. The next generation of impetuous tourists will come to accept rules set up to protect the wild. Fishermen



STELLWAGEN BANK



Designated: 1992

Location: Massachusetts Bay, between Cape Ann and Cape Cod

Size: 638 square nautical miles

Special features: Summer feeding grounds for endangered northern right, humpback, and fin whales (May through September)

Species: Endangered leatherback, green, and Atlantic ridley turtles, threatened loggerhead turtles; loons; fulmars, shearwaters, storm petrels, gannets, cormorants, phalaropes, gulls, terns,

puffins, razorbills, murres, endangered roseate terns (late May through June)

Historic resources: Wreckage of passenger ferry Portland, sunk in 1898

Activities: Fishing, whale watching

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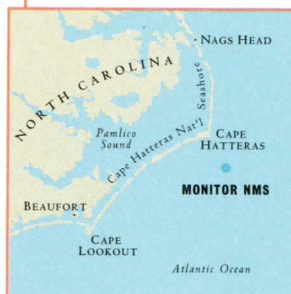
may come to see regulation as their best hope, because protected habitat translates into more fish. Residents who make a living from tourism come to understand that a protected environment draws more people than does a used-up, contaminated one. Those who complain today may tomorrow be proud that their corner of America has been saved from destruction.

Everyone who visits the sanctuaries may come to understand that much human history is under the ocean, that water is the source of

cultural and historical treasures, that water heals, nourishes, and sustains. They may also come to understand that if Theodore Roosevelt's

vision of a national park system was the best idea America ever had, the idea for national marine sanctuaries may be one of the best since then. 🐠

MONITOR



Designated: 1975 (first sanctuary)

Location: 16 nautical miles southeast of Cape Hatteras

Size: One nautical mile in diameter

Species: Amberjacks, black sea bass, scad, red barbers; corals; sea anemones

Historic resources: Protects wreckage of Civil War ironclad USS Monitor, sunk in the winter of 1862

Activities: Restricted diving

Note: Visits to sanctuary by permit only



A diver (top left) takes a coral sample at Flower Garden Banks to check the reef's health; sea lions (above) at California's Channel Islands sanctuary.

A photograph of a rocky coastline. In the foreground, there are large, light-colored, layered rock formations with many smooth, rounded stones scattered on top. The rocks lead towards the ocean. In the background, a large, craggy rock formation stands in the water under a blue sky with some clouds. The word "Blue" is written in a white, cursive font on the right side of the image.

Blue



The landscape that surrounds Monterey Bay is a study in water, light, and wildlife, mesmerizing in its diversity: Rocky offshore islands serve as refuges for hundreds of lazing sea lions wedged into crags 10 feet above the Pacific, breaking against the cliffs. On a crescent beach, gray-and-black-spotted harbor seals haul themselves up on the coarse sand; a raft of half a dozen sea otters loll in the kelp. Pelicans make their kamikaze dives; cormorants and gulls fly about like rush-hour com-

just as diverse, maybe even more frenetic. Pinnacles of rock rise from a sea bottom littered with orange starfish, fast-moving sunflower stars, and purple-black sea urchins. A large shoal of bluefish hangs suspended amid yellow-green stalks of 65-foot-tall giant kelp. There are rock walls carpeted with small pink strawberry anemones, where bulbous-faced lingcod and rockfish shoot from crevices, and decorator crabs, covered in red seaweed and green algae, camouflage themselves among red-plated mollusks, white anemones, and purple-

ringed top snails.

Once, this ocean habitat might have been sectioned into underwater oil fields and auctioned off to the highest bidder. Once, the animals and fish might have been threatened by oil spills. But in 1992 Monterey Bay was declared a national marine sanctuary—running 350 miles along the shore and 50 miles out to sea. Within its boundaries lies a submarine canyon bigger than Yosemite and deeper than the Grand Canyon. “This is a new frontier,” says Ed Cooper, a diver based at Monterey. “There are pinnacles on this coast that have never been dived on. Out there in the canyon they’re finding new species of life every week.”

Like Monterey, many of the other national marine sanctuaries remain largely unexplored, alive in ways our deserts, prairies, and mountains haven’t been in more than 100 years. The sanctuary program was created in 1972, just a century after Yellowstone was dedicated as the first national park; over the

past 23 years it has grown to encompass 12 sanctuaries under the jurisdiction of the National Oceanic and Atmospheric Association (NOAA). Some are as small as a dot in the ocean—such as the square-nautical-mile preserve that lies off the coast of North Carolina, safeguarding the remains of the Civil War-era ironclad the *USS Monitor*. Some, like the Florida Keys sanctuary, stretch for miles—in this case, 220, all the way from Soldier Key to the Dry Tortugas.

According to their mandate, the marine sanctuaries are supposed to protect “conservation, recreational, ecological, historical, research, educational, or aesthetic qualities” on the United States’ ocean frontier. Though they exclude oil and gas drilling, mineral mining, and ocean dumping, they usually allow uses like fishing and commercial shipping. In some, however, such as the Florida Keys, areas that are particularly sensitive are being designated no-take replenishment zones,

Frontiers

The marine sanctuaries are largely unexplored, alive in the way our prairies and deserts were a century ago.

BY DAVID HELVARG

muters. A great blue heron stands on a floating piece of plywood; he strikes below the surface with his rapier bill and tumbles in after it, sinks, and then resurfaces in an undignified ruffle of feathers.

From the Coast Guard pier you can see squadrons of brown pelicans and hear the barking of seals. Thousands of dusky shearwaters darken the horizon as they move like a squall line over the water. Just off the pier a sea otter grooms itself, dives, and comes back up, swimming on its back, cheerfully tearing the legs off a crab with its pointy little teeth.

Below the surface of the sea there is another world—one



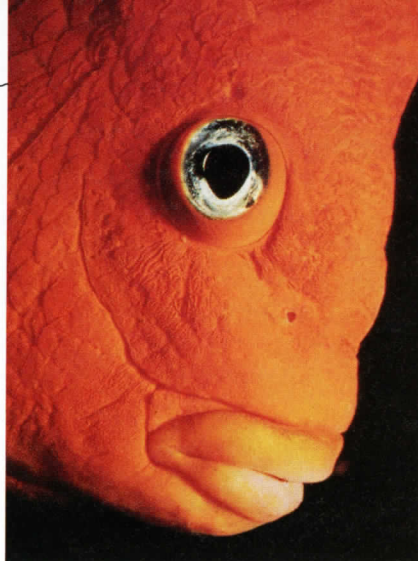
Washington's Olympic Coast sanctuary (left); at Flower Garden Banks, a manta with remoras (above).



where fishing and coral collecting will be off-limits, to allow species to rebound.

The replenishment zones aren't limited to Florida. The manager of California's Channel Islands sanctuary, NOAA Lieutenant Commander John Miller, sees fishing as having a big impact on his reserve. The state's Department of Fish and Game, which shares jurisdiction within state waters, has established a no-take fishing zone off Anacapa, the smallest of the Channel Islands. "If you dive, you notice more abalones and lobster and fish

"It's really this tiny thing buried in the bureaucracy, and everyone above it takes their cut of the money," says Captain Francesca Cava, the sanctuary program chief from 1992 to 1994. "I was at [NOAA] mission and priority meetings where the sanctuary program wasn't even on the table." Cava, a quietly determined woman, served 21 years in the NOAA Corps (the organization's 400-member uniformed service) before resigning last October, in part because, she says, she wasn't given the



group called the Conch Coalition, which opposes the sanctuary and its regulations. In 1992 NOAA attorneys brought suit against world-famous treasure hunter Mel Fisher for destroying a seagrass meadow off Marathon Key. A federal court granted a preliminary injunction to prevent Fisher's company from

using prop-wash deflectors to search for sunken ships in the sanctuary. The suit has not yet been resolved.

But Fisher, a local hero to many, and his attorney, David Paul Horan, helped mobilize treasure hunters, shipwreck "salvagers," and others involved in extractive industries on the reef in an antisancuary campaign. "We don't feel NOAA represents anyone but another layer of bureaucratic government involvement down here," says Conch Coalition spokeswoman Michele Wells-Usher. "The answer to our ecological problems never resides in the house of the federal government."

To emphasize this belief, the coalition staged a number of angry protests, including

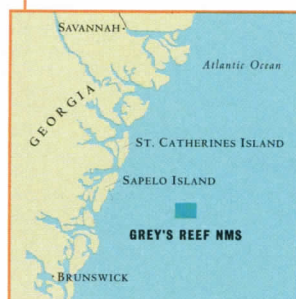
tamination in parts of the bay.

The Keys are also suffering the effects of overdevelopment. A 1993 study done for the Environmental Protection Agency found 5,000 illegal cesspits there; Key West has a municipal sewage outfall that discharges into the sanctuary.

Tourism draws some 4 million visitors a year; six times the number of vacationers that visit Australia's Great Barrier Reef now swim and play on top of coral gardens one-tenth its size. At the same time, plans are moving forward to expand U.S. Route 1 to a four-lane highway through Key Largo in order to attract more visitors.

All these problems have contributed to the political trouble posed by a local

GRAY'S REEF



Designated: 1981

Location: 17.5 nautical miles east of Sapelo Island

Size: 17 square nautical miles; rock reef—limestone outcropping

Special features: Calving grounds for endangered northern right whales (December through March)

Species: Loggerhead turtles; northern right whales; groupers, mackerel, king mackerel, Spanish mackerel, barracuda, black sea bass

Historic resources: Potential artifacts of prehistoric Indian sites

Activities: Sport fishing; diving; swimming; boating

out there in the protected area," Miller says. "It's like you cross this invisible line and find all this additional life." Actually, it's a somewhat visible line, as lobster fishermen set up their traps just outside the no-take boundary.

However, for all its successes, the program faces problems as it heads toward its first quarter-century. The sanctuaries are seriously underfunded and understaffed; they lack political clout, even within their own agency; and they are not widely recognized by the public. Partly because they're not well known, they are easy targets for special interests seeking continued industrial use of the marine environment.

support she needed. "It's almost like you plant a seed to germinate and then spray it with herbicide," she says.

The sanctuary at the Florida Keys illustrates some of the problems within the program. Declining water quality has reduced catches and led to coral diseases, bleaching, and declining growth; sponge and seagrass die-offs; and algae blooms. South of the Everglades, Florida Bay recently suffered a fish-killing red tide that scientists suspect fed off nutrients flushed into the water by sugar-industry operations in the Everglades. Further, a National Marine Fisheries report cites high levels of endosulfan pesticide con-

FLORIDA KEYS



Designated: 1990

Location: Waters surrounding Florida Keys to the Dry Tortugas

Size: 2,800 square nautical miles

Special features: 6,000 species not otherwise protected

Species: Brain and star corals; gorgonian corals, including sea fans; tarpon, parrot fish, sharks, barracuda, snappers, tangs, wrasses; nudibranchs; feather duster worms; bottle-nosed and stenella dolphins; manatees; spiny lobsters;

blue crabs; green, loggerhead, and hawksbill turtles; birds, including kingfishers, roseate spoonbills, scarlet tanagers, black skimmers (late September through early April), and great white and blue herons, bald eagles, ospreys, brown pelicans (year-round)

Historic resources: Shipwrecks, including the wreck of the Spanish treasure ship Atocha and the slave ship Henrietta Marie

Activities: Diving; sport fishing, including fly fishing; snorkeling; sailing; boating; swimming

THE SANCTUARIES ARE UNDERFUNDED AND UNDERSTAFFED, THEY LACK POLITICAL CLOUT, AND THEY ARE NOT WIDELY RECOGNIZED BY THE PUBLIC.

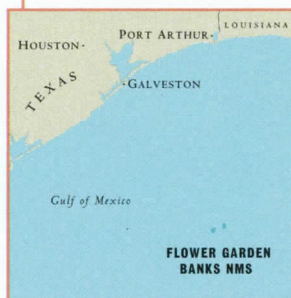
one at which sanctuary manager Billy Causey and his citizen-advisory-council chair, George Barley, were hanged in effigy. Causey's son was also harassed at school by children of fishermen and salvagers.

But activist Craig Cuirolo warns, "When you enter a highly developed area that al-

ready exceeds its carrying capacity and expect habitat protection to be a priority, it won't happen without conflict." A sun-weathered former charter-boat captain, Craig and his wife, DeeVon, are founders of Reef Relief, a local environmental group that helped campaign to establish the sanctuary in 1990.

The battles in Florida are not the first to be fought over the marine-sanctuary program. The push to create the sanctuaries was in large measure a response to public anger over the disastrous Santa Barbara oil spill of 1969. Still, when Congress established the program in 1972, the oil and gas industry challenged it, as did the Department of Defense. While ap-

FLOWER GARDEN BANKS



Designated: 1992

Location: 105 nautical miles southeast of Texas-Louisiana border

Size: 41.7 square nautical miles

Special features: Northernmost coral reef in the United States

Species: Hard corals, mostly brain and star; coralline algae; hammerhead sharks (January through February), whale sharks; spotted eagle rays (spring), manta rays; loggerhead and hawksbill turtles; tropical-reef fish

Activities: Diving; some sport fishing

pearing to stand firm against this political pressure, Congress failed to provide the new program with any funding at all during its first seven years of existence.

In 1975 the first marine sanctuary was established off North Carolina, after a Duke University research vessel discovered the wreckage of the

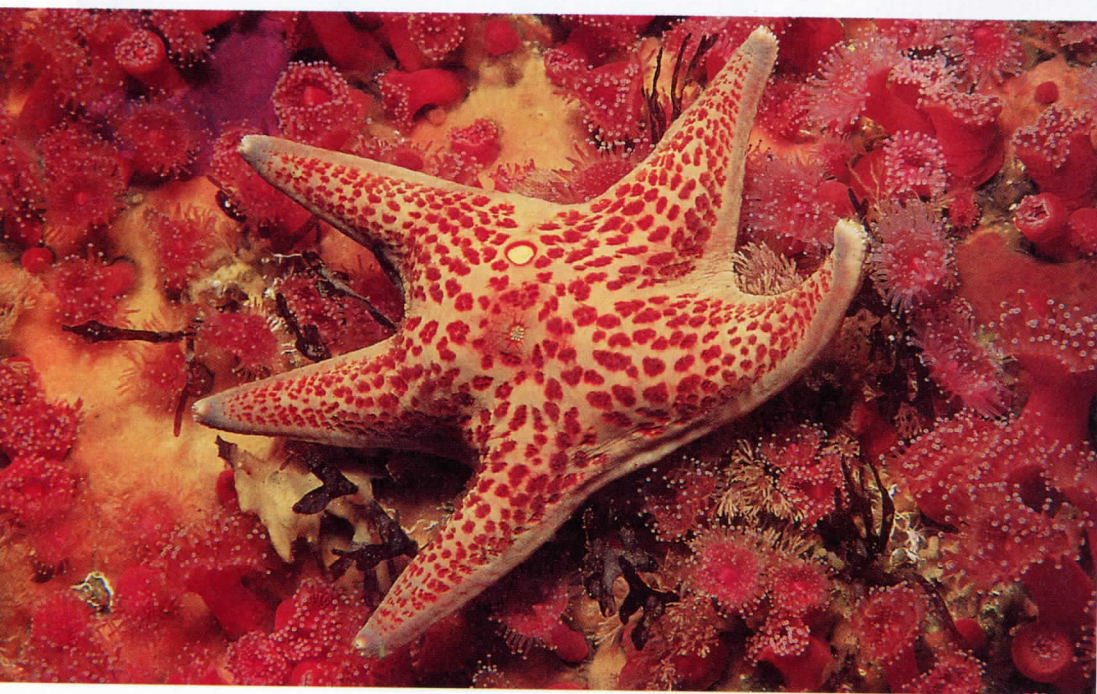
USS Monitor where it had sunk in a storm in 230 feet of water. At the end of the year a second sanctuary was established to protect a fragile coral-reef habitat at Key Largo, Florida, a site that had already been under a presidential protection order since 1960. Both sanctuaries were financed by moneys diverted



A brilliant garibaldi fish (top left) at California's Channel Islands sanctuary; an Atlantic wolffish (above) at Stellwagen Bank, off Massachusetts.



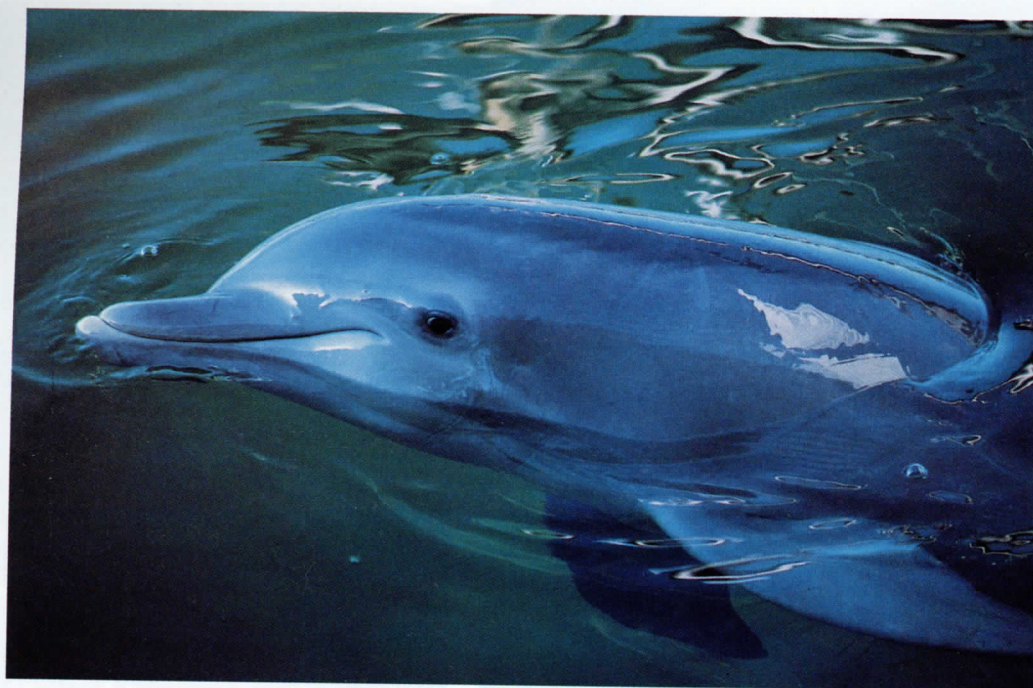
Among the most delicate of the undersea resources the sanctuaries are called upon to protect are living coral reefs, prey to collectors and threatened by sailboats as well as by unwitting divers.



Large star coral (above left), at Flower Garden Banks; spiny brittle star corals (above) at Channel Islands; red night shrimp (above right) at Flower Garden Banks; a school of smallmouth grunts (right) the Florida Keys; a leather star (left) on a sea of strawberry anemones at Monterey Bay.



CLOCKWISE FROM TOP LEFT: GREGORY S. BOLAND; MARK CONLIN; JESSE CANCELMO; LARRY LIPSKY; BRANDON D. COLE



from other NOAA programs.

Beginning in 1977, President Carter accelerated the designation process, which led to the establishment of four new sanctuaries, off Florida, Georgia, and California, including the 1,252-square-nautical-mile Channel Islands sanctuary, whose waters are frequented by 27 species of whales and dolphins.

During the eight years of the Reagan administration, the U.S. coastline came under siege. Secretaries of the Interior James Watt and Donald Hodel planned to open 1 billion acres of the outer continental shelf to oil and gas development, greatly expanding the number of drilling platforms off the coast of California and opening New England's historic fishing grounds and Florida's coral reefs to drilling for the first time. Hodel accused those opposed to the plans of wanting to place the country "at the tender mercies of OPEC." What the administration and NOAA's political appointees failed to count on, however, was an explosion of grass-

roots outrage over the proposed oil leases.

In the early 1980s tens of thousands of protesters across the country, fearful of oil spills from drilling platforms and tanker accidents, began to turn out at raucous public hearings held by the Department of the Interior's Mineral Management Service, launched petition campaigns, and took to the airwaves.

Polls showed opposition to the lease sales running at 70 to 85 percent in coastal states like California, Massachusetts, and Florida. "I've never seen such a broad coalition form so quickly in my life," says Leon Panetta, a former congressman from Monterey and current White House chief of staff. "It was a real groundswell."

In Florida, threats of oil drilling and three ship groundings that took place within 18 days of each other in 1989 inspired a movement to extend sanctuary protection throughout the Keys. "This community was never more galvanized than when there was talk of an oil spill,"

says Chris Doyle, a former reporter with the *Key West Citizen*. "People realized what oil could do to our waters and reef system. The economy would be gone; it would be the end of a way of life."

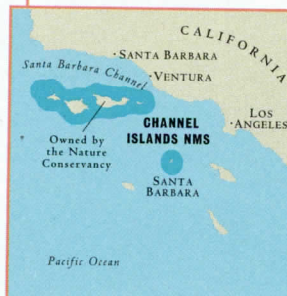
In central California an alliance of county governments commissioned a study that found that their area—worth \$50 billion in real estate, tourism, and other economic resources—depended on a clean and healthy ocean;

antidrilling groups linked up with local governments, the tourist industry, and commercial fishermen to lobby for permanent protection of the coastline.

"When the sanctuary program first came into being, we raised hell because we wanted to make sure control of fishing continued under existing state and federal rules and that we didn't get saddled with another layer of regulation," says Zeke Grader, executive director of the Pacific Coast Federation of Fishermen's Associations. "But later we came to see that if you get involved in the process it may also be an opportunity to protect critical habitat."

Commercial fishermen who have supported sanctuaries as a protection against oil drilling, marine mining, and dumping in their fisheries have done so with the understanding that they wouldn't face any new restrictions. Unfortunately, decades of lax state and federal enforcement, growing fleets, high-tech fishing technology, and polluted spawning habitats have led to the collapse or endangerment of most major U.S. commer-

CHANNEL ISLANDS



Designated: 1980

Location: Pacific Ocean, approximately 20 nautical miles off Santa Barbara, California

Size: 1,252 square nautical miles

Special features: Between March and May, the largest concentration of marine mammals in the United States—more than 10,000 seals and sea lions—congregate at Point Bennett Beach (San Miguel Island); Anacapa Island is the only permanent breeding ground for California brown pelicans

Species: Kelp; gray whales; elephant and harbor seals; California sea lions; red urchins; abalones; rockfish; sea anemones; purple hydrocorals; octopuses; California spiny lobsters; rock crabs; brown pelicans, Brant's cormorants, double-crested cormorants, pelagic cormorants, Xantus's murrelets, pigeon guillemots, Cassin's auklets

Historic resources: 100 shipwrecks within sanctuary; Native American artifacts—onshore middens as well as underwater finds

Activities: Diving; whale watching; fishing; tidepooling; sailing; hiking on islands

Note: Visits to Santa Cruz Island only by permit from the Nature Conservancy

cial fisheries, including many located within the sanctuaries.

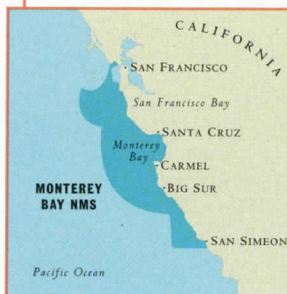
"If a case can be made for regulating certain gear or fisheries we'll listen, but it has to make sense," Grader warns. His organization's successful working relationship with Ed Ueber, manager of the fishery-rich Gulf of the Farallones and Cordell Bank sanctuaries, as well as part of Monterey Bay, has encouraged other fishing-industry groups

to work with and support the newer Stellwagen and Olympic coast sanctuaries. "Overall, the sanctuary program can work well and be beneficial to fishermen," Grader says. "The problem is, [the sanctuaries] don't have enough people to do their own work effectively. They've always been the poor stepchild in NOAA."

In 1988 Congress joined the fast-growing "seaweed rebellion," identifying a number of new sanctuaries for designation. As a result, the last seven years have seen the dedication of more than half a dozen new sites, including the rugged Olympic coast of Washington, with its huge bird rookeries, cobbled beaches, pine-covered sea stacks, and deep-ocean geothermal vents, where giant clams and five-foot-long sea worms live off volcanic sulfur emissions.

"I'd say it's rare that a week

MONTEREY BAY



Designated: 1992

Location: Pacific Ocean, between Cambria, California, and the Marin headlands

Size: Larger than either Yosemite or Yellowstone—4,024 square nautical miles

Special features: Kelp forest; closest-to-shore deep-ocean environment in the continental United States; one of North America's deepest underwater canyons; Native American relics (onsore); Monterey Bay Aquarium

Species: Giant squid; gray whales (late November through late January; return migration in late spring), endangered blue whales; sharks; sea otters; seals; sea lions; northern anchovies; giant kelp; sandpipers, cormorants, brown pelicans

Historic resources: Wreckage of 1,276 vessels, including the USS Macon, sunk in 1935

Activities: Great American Fish Count (for volunteer divers; call the sanctuary for dates and other information); diving; whale watching

IN THE EARLY 1980s

THOUSANDS OF ANTI-

OFFSHORE DRILLING PRO-

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PETITIONS, AND TOOK TO

THE AIRWAVES.

goes by where I'm not involved in some sanctuary program or discussion," says Douglas Hall, assistant secretary for oceans and atmosphere in the Department of Commerce and the number two man at NOAA. "The [Clinton] administration has increased the sanctuaries bud-

get from seven million dollars to twelve million dollars in an extraordinarily bad fiscal climate, which I think demonstrates a serious commitment. Still, the available resources and funding are inadequate, and we recognize that."

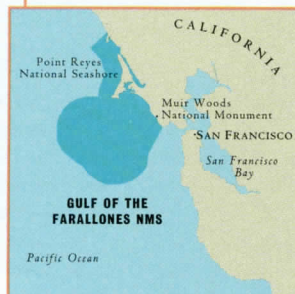
Prospects for improved funding remain bleak. The



Off the Florida Keys, a bottle-nosed dolphin (top left); at Monterey Bay, a sea otter (above) raises its paws.

\$12 million that was eventually appropriated for 1995 is well below the \$20 million approved by Congress in its 1992 reauthorization or the \$30 million recommended as "adequate" to meet program goals in the *Potter Report*, written by an outside review panel established by NOAA in 1991. Furthermore, when it comes up for reauthorization next year, the program will not be able to count on the strong backing it used to receive from the now-defunct House Merchant Marine and Fisheries Committee and its chair, Democrat Gerry Studds of Massachusetts. The new Subcommittee on Fisheries, Wildlife, and Oceans of the House Resources Committee is chaired by New Jersey Republican Jim Saxton, an environmental moderate. Saxton is a past supporter of the sanctuaries, and some ob-

GULF OF THE FARALLONES



Designated: 1981

Location: Pacific Ocean, from Half Moon Bay to Bodega Head, including the Farallon Islands

Size: 948 square nautical miles

Special features: Largest breeding population of marine mammals and seabirds in the continental United States; protects more than twice the estuarine area managed by the western-estuarine-reserve system

Species: Blue, gray, humpback, minke, and

sperm whales; dolphins; seals; sea lions; sea otters; ashby storm petrels (95 percent of all such petrels breed within the sanctuary), breeding colonies of common murrelets, Cassin's auklets, and western gulls

Historic resources: More than 100 shipwrecks, including the wreck of the *San Augustine*, which dates from 1595

Activities: Swimming; diving; whale watching; canoeing; kayaking

servers see him as a buffer between ocean-protection programs and Resources Committee chair Don Young of Alaska (R), a prodevelopment firebrand who once compared his predecessor, George Miller of California (D), to a communist during a debate over the 1872 Mining Law.

Asked about the future of the sanctuary program, Saxton insists that the political realignment in Washington "doesn't mean that we're going to discard the environmental accomplishments of the past." Still, his office has made it clear that when it comes to budgetary issues,

"everything is up for review."

Despite their many financial and political problems, the sanctuaries have an advantage that some better-funded programs lack: the broad-based support of citizen activists and many coastal communities committed to the long-term conservation, restoration, and preservation of America's blue frontier.

"Given the current fiscal constraints at the federal level, we recognize that our sanctuaries can't survive on the government alone," says Karin Strasser Kauffman, chair of the Monterey citizen-advisory committee. As part of an expanding program of fundraising projects and private partnerships, her group is sponsoring a regional art contest to come up with a design for a minimum of 5,000 specialized license plates, half of whose annual \$40 price will



At Monterey Bay, a pair of two-month-old northern elephant seals (above); at the same sanctuary, a sora (top right) wanders along the shore.

go to support the sanctuary. Staff at the Keys sanctuary are also working with the state of Florida on a coral-reef license plan.

The Monterey Bay Aquarium is developing educational materials to be used throughout the sanctuary system. And in Santa Barbara, the Museum of Natural History is working with the Channel Islands sanctuary to sponsor "Los Marineros," an environmental-awareness program for 850 fifth graders. The Farallones sanctuary has mobilized 83 beach-watch volunteers and 30 at-sea science observers who provide free services worth \$350,000 a year. In Newport News, Virginia, the Mariners' Museum has established a Friends of the *Monitor* Fund. Former sanctuaries director Cava also identified \$8 million in private and government funds available for a

DESPITE THEIR PROBLEMS, THE SANCTUARIES HAVE AN ADVANTAGE THAT SOME BETTER-FUNDED PROGRAMS LACK: THE SUPPORT OF CITIZEN ACTIVISTS.

proposed Marine Learning Center at Pier One in San Francisco, but the federal government has so far been unable to come up with the additional \$5 million needed to open it.

Rushed to dedication by President Bush during his 1992 reelection campaign, the Monterey sanctuary remains at some risk from wastewater discharges on its periphery and possible spills from near-



shore oil-tanker traffic. On Monterey's northern border, the Farallones sanctuary is also burdened with environmental abuse from the past: 50,000 corroded barrels of nuclear waste and a radioactive aircraft carrier scuttled there by the Navy in the 1950s. Still, despite these lingering threats, this stretch of ocean wilderness helps guarantee the sanctuary continued public support—and vociferous controversy.

Noise pollution from ATOC (acoustic thermometry of ocean climate) has become an issue here. The project is a "big science" global-warming experiment that uses low-frequency sounds to determine if changes in ocean temperature can be measured. It has divided the scientific and conservation panels of its citizen-advisory committee. "Chumming" is another issue that generates heated local debate. Dive-boat operators spread blood and fish guts on the water to attract great white sharks for customers willing to pay good money to play bait inside a shark cage.

Sitting in a Monterey pub, Ed Cooper argues, "You're changing the animal's natural behavior. It's like spreading

blood on the hiking trails in Yellowstone to attract grizzlies for viewing."

The argument goes on, and

CORDELL BANK



Designated: 1989

Location: Pacific Ocean, from Point Reyes to Bodega Head

Size: 397 square nautical miles

Special features: Most northern protected temperate reef in the United States

Species: Hydrocorals; coralline algae; sea anemones; rockfish; whales; green, leatherback, and Pacific ridley turtles; brown pelicans, puffins, auklets, murre

Activities: Fishing; birding; whale watching

OLYMPIC COAST



Designated: 1994

Location: Off the western coast of the Olympic Peninsula, between Cape Flattery in the north and Copalis Beach in the south

Size: 2,500 square nautical miles

Special features: One of the largest populations of bald eagles in the continental United States; Makah Research and Cultural Center (archeological museum)

Species: California gray whales (March and April), humpback whales; northern fur seals

(March); Steller's sea lions; sea otters; salmon, flatheads, halibut; Dungeness crabs; red-tailed hawks, peregrine falcons; brown pelicans, black-footed albatrosses

Historic resources: Native American—village sites; ancient canoe runs; petroglyphs; Native American artifacts; numerous shipwrecks

Activities: Boating; birding; whale watching; sea kayaking; fishing



the vehemence of the debate reminds me of something sanctuary manager Ueber once told me: "I get calls all the time from people saying, 'What are you up to in our sanctuary?' People feel it's their sanctuary, they own it, and if the government wants to help them out, fine, but it's really there for them and their kids."

But without enough funding, and without strong backing for regulations to preserve threatened fish and marine-mammal habitat, enthusiasm alone won't protect America's coastlines. "The sanctuary program has designated twelve sites and begun to develop some new ideas, but fundamentally it hasn't been able to protect what needs to be protected," says Cava.

"When you consider that the sanctuaries may be carrying the burden of people's ex-

pectations and dreams for ocean protection, I think it is probably too much to bear," adds Michael Weber, coauthor of *The Wealth of Oceans*.

Still, a clear afternoon spent walking the beach at Monterey can ease those concerns. The only place I know with a richer variety of life is below the water's surface. I lean into the sea wind and recall a video I recently saw at the nearby aquarium, shot by a deep-diving robot sub. The sub was 600 feet down in the cold black canyon's mid-water range when a great white shark, wide as a jet fighter's fuel tank and sleek as death, swam through its spotlight beam. A shot of adrenaline ran through my body, reminding me of an Edward Abbey quote: "If there's not something bigger and meaner than you are out there it's not really wilderness." 🐋

FAGATELE BAY



Designated: 1986

Location: Tutuila Island, American Samoa

Size: 0.25 square nautical mile

Special features: Traditional fishing; the sanctuary is surrounded by a submerged volcanic crater

Species: Deep-water coral terraces containing hard and soft corals; sea anemones, limpets, urchins; octopuses; tropical fish; sea turtles; humpback whales (June through September)

Activities: Diving

HAWAIIAN ISLANDS HUMPBACK WHALE



Designated: 1992

Location: Four-island area of Maui County

Size: 1,300 square nautical miles

Special features: Principal breeding ground for humpback whales in northern Pacific

Species: Humpback whales (mid-December through mid-April), fin, sperm, pygmy sperm, minke, and pilot whales; endangered monk seals; spinner, Pacific white-sided, Pacific bottle-nosed, and striped dolphins; brown boobies, endangered dark-rumped petrels, great frigatebirds; green, hawksbill, leatherback, loggerhead, and Olive ridley turtles

Historic resources: Remains of World War II shipwrecks; offshore shark temples

Activities: Diving; whale watching; boating



At the Hawaiian sanctuary, set up expressly to protect the species, a humpback whale shows off.